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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/624,857 | 07/24/2000 | David Mottier | 0054-0215P | 6255 |
| 2292 | 7590 | 06/16/2004 | EXAMINER | |
| BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747 | | | SHAH, CHIRAG G | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2664 | |

DATE MAILED: 06/16/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/624,857

Applicant(s)

MOTTIER ET AL.

Examiner

Chirag G Shah

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-21, 23, 31 and 34 is/are rejected.
- 7) ☒ Claim(s) 22, 24-30, 32 and 33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 7/24/00 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: Application lacks descriptive titles in the specification such as the Background, Summary of Invention, Brief Description, and Detailed Description.

Appropriate correction is required.

Claim Objections

2. Claim 22 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 22 depends on a canceled claim 1.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 18-21, 23, 31 and 34 rejected under 35 U.S.C. 102(a) as being anticipated by Popovic ("Spreading Sequences for Multi-Carrier CDMA Systems").

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Referring to claim 18, Popovic discloses in figure 1 and in page 1 of a method of assigning one or more spreading sequences $S_m(k)$ to a user of a multi-carrier code division multiple access transmission network at a transmitter of the network, each element of the spreading sequences being multiplied by a data item $D_m(t)$ to be transmitted, and then transmitted on a corresponding sub-carrier (N carrier), wherein the improvement comprises the steps of: assigning to the user at least one spreading sequence $S_m(k)$ (figure 1 on page 1), and utilizing a minimization function (spectral correlation function), providing the measure of mutual interference between a pair of users in the MC-CDMA system (as disclosed on pages 2 and 3 in the section of Selection criteria for MC-CDMA sequences) to minimize the interference caused between the at least one sequence assigned to the user $S_m(k)$ and a predetermined set of spreading sequences assigned by the transmitter as claim.

Referring to claim 19, Popovic discloses in figure 1 and in section 2 on pages 2 and 3 of a method wherein the predetermined set of spreading sequences includes the set of sequences ($S_m(K)$, $K=0,1,\dots, N-1$) which are used by the network at the instant of assigning (difference classes of sequences as disclosed in section 2 are candidates for the selection of asynchronous MC-CDMA spreading sequences at the instant and after the instant of assigning) as claim.

Referring to claim 20, Popovic discloses in figure 1 and in sections 2 on pages 2 and 3 of a method wherein the predetermined set of spreading sequences includes the set of sequences ($S_m(K)$, $K=0,1,\dots, N-1$) which are potentially usable after the instant of assigning (difference classes of sequences as disclosed in section 2 are candidates for the selection of asynchronous MC-CDMA spreading sequences at the instant and after the instant of assigning) as claim.

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Referring to claim 21, Popovic discloses in section 4 on pages 4 and 5 and conclusion of a method wherein the set of spreading sequences includes a favored set of spreading sequences based on numerical results between Walsh and Gold sequences as well as Orthogonal Gold and Zadoff-Chu sequences, taking into account the crest factors and the dynamic ranges, the set of Zadoff-Chu sequences seems to have the best performance for the application in the asynchronous MD-CDMA systems) as claim.

Referring to claim 23, Popovic discloses in figure 1 and in section 4 on pages 4 and 5 and conclusion a method wherein each user is assigned a spreading sequence so as to take into account the transmission quality predicted for the spreading sequence based on numerical results between Walsh and Gold sequences as well as Orthogonal Gold and Zadoff-Chu sequences, taking into account the crest factors and the dynamic ranges, the set of Zadoff-Chu sequences seems to have the best performance for the application in the asynchronous MD-CDMA systems) as claim.

Referring to claim 31, Popovic discloses in section 4 on pages 4 and 5 and conclusion wherein the method is implemented dynamically and includes re-assigning during transmission, at predetermined instants (Zadoff-Chu sequences are assigned dynamically and may be dynamically reassigned since any pair of sequences in this set has the optimum period crosscorrelation function with the constant magnitude as disclosed in the Numerical results section) as claim.

Referring to claim 34, Popovic discloses in figure 1 in page 1 of a transmitter for a Multi-Carrier Code Division Multiple Access transmission system, of the type means for multiplying a user data item $D_m(t)$ by each of the elements of at least one spreading sequence $S_m(k)$ and

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means for modulating on a sub-carrier (N carrier) each of the signals originating from the multiplication means comprising means for assigning to the user at least one spreading sequence $S_m(k)$ (figure 1 on page 1) and means for utilizing a minimization function (spectral correlation function), providing the measure of mutual interference between a pair of users in the MC-CDMA system (as disclosed on pages 2 and 3 in the section of Selection criteria for MC-CDMA sequences) to minimize the interference caused between the at least one sequence assigned to the user $S_m(k)$ and a predetermined set of spreading sequences assigned by the transmitter as claim.

Allowable Subject Matter

5. Claims 22, 24-30, 32 and 33 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments with respect to claims 18-34 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any response to this final action should be mailed to:

Box AF

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Or faxed to:

(703) 305-9051, (for formal communications; please mark "EXPEDITED
PROCEDURE)

Or:

(703) 305-5403 (for informal or draft communications, please label
"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chirag G Shah whose telephone number is 703-305-5639. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 703-305-4366. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cgs
June 7, 2004

ajit
Ajit Patel
Primary Examiner